

REMARKS

Reconsideration of the pending application is respectfully requested on the basis of the following particulars.

1. Rejection of claims 1 and 3 under 35 U.S.C. § 102(b) as being anticipated by U.S. patent no. 4,937,766 (*Deppe et al.*)

Reconsideration of this rejection is respectfully requested, on the basis that the *Deppe* patent fails to disclose each and every recited element of pending claim 1. Pending claims 3-6 depend from claim 1, and are therefore patentable as containing all of the recited elements of claim 1, as well as for their respective recited features.

By way of review, the embodiment of pending claim 1 requires a laser marking device that irradiates a laser beam on a workpiece in order to transform a portion inside the workpiece at a focal point of the laser beam, thus putting a dot in a predetermined area. An acquiring means acquires two-dimensional position information and density information of the dot. A coordinate setting means calculates, for each dot, according to the density information, dot depth information, as one of the three-dimensional coordinates, showing the distance from the surface of the workpiece to the dot in the thickness direction of the workpiece. The coordinate setting means further sets three-dimensional coordinates for each dot based on a position that is specified by the dot depth information and the two-dimensional position information acquired by the acquiring means. The laser marking means performs the marking using the three-dimensional coordinates as a laser beam focal point.

In contrast, the *Deppe* patent fails to disclose a laser marking device that irradiates a laser beam on a workpiece in order to transform a portion inside the workpiece at a focal point of the laser beam, thus putting a dot in a predetermined area, as required by pending claim 1. The *Deppe* patent also fails to disclose an acquiring means for acquiring two-dimensional position information and density information of the dot and a coordinate setting means that calculates, for each dot, dot depth information showing the distance from the surface of the workpiece to the dot

in the thickness direction of the workpiece and setting three-dimensional coordinates for each dot based upon a position specified by the dot depth information and the two-dimensional position information acquired by the acquiring means, all as required by pending claim 1. The *Deppe* patent further fails to disclose the laser marking means marking with the three-dimensional coordinates as the focal point.

The disclosure of the *Deppe* patent differs from the embodiment of pending claim 1 in a number of respects. The *Deppe* patent discloses a method and device for the acquisition of three-dimensional data representing the measurements or dimensions of a large scale object (col. 1, lines 5-7). This data acquisition is achieved by providing a characteristic point on the object with an *external* marker, which marking may be done through a laser beam projected onto the object (col. 2, lines 17-23). It is noted that it is apparent that any visually accessible point on the surface of the object can be used as reference point, thus one can cover the entire *surface* of the object (col. 2, lines 24-27).

From this discussion, it is clear that the system of the *Deppe* patent utilizes a device that merely maps the *exterior* of an object. This is in clear contrast with the embodiment of amended claim 1, which requires a laser marking device that irradiates a laser beam on a workpiece to transform a portion *inside* the workpiece at a focal point of the laser beam.

Since the device of the *Deppe* patent merely illuminates the exterior surface of the object, it follows that no transformation of a portion *inside* the workpiece occurs. Thus, while the camera sensors 1, 1' of the *Deppe* patent can detect the three-dimensional positioning of a spot on the exterior of an object, they do not acquire density information of a dot, as is required by pending claim 1.

Since the camera sensors 1, 1' of the *Deppe* patent do not acquire density information of a dot, it further follows that, even if the *Deppe* patent discloses coordinate setting means, such coordinate setting means do not calculate for each dot, according to the density information, dot depth information showing the *distance from*

the surface of the workpiece to the dot in the thickness direction of the workpiece, as required by pending claim 1.

Since any possible coordinate setting means disclosed by the *Deppe* patent fails to calculate dot depth information based upon the dot density information, it further follows that such a coordinate setting means fails to disclose setting three-dimensional coordinates for each dot based upon the position specified by the dot depth information and the two-dimensional data acquired by the acquiring means.

Since the *Deppe* patent thus fails to set three-dimensional coordinates utilizing dot depth information, the laser marking means of the *Deppe* patent must also fail to perform marking with the set three-dimensional coordinates incorporating dot depth information, all as required by pending claim 1.

Thus, for at least these reasons, the *Deppe* patent fails to disclose at least a laser marking device that irradiates a laser beam on a workpiece in order to transform a portion inside the workpiece at a focal point of the laser beam, thus putting a dot in a predetermined area, and an acquiring means for acquiring two-dimensional position information and density information of the dot and a coordinate setting means that calculates, for each dot, dot depth information showing the distance from the surface of the workpiece to the dot in the thickness direction of the workpiece and setting three-dimensional coordinates for each dot based upon a position specified by the dot depth information and the two-dimensional position information acquired by the acquiring means, and the laser marking means marking with the three-dimensional coordinates as the focal point, all as required by pending claim 1.

Accordingly, since the *Deppe* patent fails to disclose at least a laser marking device that irradiates a laser beam on a workpiece in order to transform a portion inside the workpiece at a focal point of the laser beam, thus putting a dot in a predetermined area, and an acquiring means for acquiring two-dimensional position information and density information of the dot and a coordinate setting means that calculates, for each dot, dot depth information showing the distance from the surface of the workpiece to the dot in the thickness direction of the workpiece and setting

three-dimensional coordinates for each dot based upon a position specified by the dot depth information and the two-dimensional position information acquired by the acquiring means, and the laser marking means marking with the three-dimensional coordinates as the focal point, all as required by pending claim 1, withdrawal of this rejection is respectfully requested.

As mentioned above, the applicant submits that independent claim 1 is patentable and therefore, claims 3-6, which depend from claim 1, are also considered to be patentable as containing all of the elements of claim 1, as well as for their respective recited features.

2. Rejection of claims 4-6 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent no. 4,937,766 (*Deppe et al.*) in view of U.S. publication no. 2003/0219577 (*Tait et al.*)

Reconsideration of this rejection is respectfully requested on the basis that the rejection fails to establish a *prima facie* case of obviousness with respect to claims 4-6.

With respect to claims 4-6, the *Tait* publication fails to provide for the deficiencies of the *Deppe* patent, as discussed above with respect to claim 1, from which claims 4-6 depend.

Specifically, the *Tait* publication fails to disclose a laser marking device that irradiates a laser beam on a workpiece in order to transform a portion inside the workpiece at a focal point of the laser beam, thus putting a dot in a predetermined area, as required by pending claim 1.

While the *Tait* publication discloses the use of a laser used to cut an optical film (paragraph [0030]), the laser does not transform an inside portion of a workpiece to create a dot, as required by pending claim 1, but instead vaporizes the film body along a cut line or otherwise is transmitted or reflected by the film (paragraph [0030]).

There is simply no discussion in the *Tait* publication of the use of a laser to create such marking.

Further, a skilled artisan would not have had any reason to combine the teachings of the *Deppe* patent and the *Tait* publication, since the *Deppe* patent is drawn to a device and method for the acquisition of three-dimensional data of large scale objects and the *Tait* publication is drawn to the creation and cutting of optical films without causing delamination. There is simply no nexus between the *Deppe* patent and the *Tait* publication that would have caused a skilled artisan to utilize the teachings of the *Deppe* patent and the *Tait* publication together. The *Deppe* patent and the *Tait* publication are not in the same field of endeavor, do not involve solutions to the same or similar problems, and are simply too divergent for a skilled artisan to have considered together.

Accordingly, since the combination of the *Deppe* patent and the *Tait* publication fails to disclose every element of pending claims 4-6, and since a skilled artisan would not have been motivated to combine the teachings of the *Deppe* patent and the *Tait* publication, a *prima facie* case of obviousness cannot be maintained, and withdrawal of this rejection is respectfully requested.

3. Allowable subject matter

The applicant gratefully acknowledges the indication of allowability of claims 2 and 7-12.

With respect to the statement of reasons for allowance on page 5 of the Office action, line 3 of paragraph 6 states that “an object to be marked” includes various elements of the indicated claims, including “a marking information setting means...”. Since, in the claims, it is actually the laser marking device that includes the marking information setting means and the various other recited elements, it is believed that this statement is in error.

Accordingly, revision or clarification of the statement of reasons for allowance is respectfully requested in the next Office communication. The applicant respectfully requests that the examiner carefully review the language utilized in the reasons for allowance. A possible suitable revision may be “~~an object to be marked~~ a laser marking device that includes.”

4. Conclusion

In view of the foregoing remarks, it is respectfully submitted that the application is in condition for allowance. Accordingly, it is respectfully requested that every pending claim in the present application be allowed and the application be passed to issue.

If any issues remain that may be resolved by a telephone or facsimile communication with the applicant's attorney, the examiner is invited to contact the undersigned at the numbers shown below.

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Respectfully submitted,

A handwritten signature in black ink, appearing to read "George A. Loud", written over the printed name.

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